What is claimed is:

1. An apparatus adapted for detecting and stopping leaks in a liquid line comprising:

a liquid shutoff valve,

an activation mechanism for the liquid shutoff valve,

a logic controller,

an acoustic transducer, and

a software program to analyze the output of the acoustic transducer and close the liquid shutoff valve when conditions of a leak are detected,

wherein the apparatus monitors the flow of liquid at or near the entry point of a structure.

2. The apparatus of Claim 1 wherein said apparatus further comprises a visual output device to announce the presence of a liquid shutoff event.

3. The apparatus of Claim 1 wherein said apparatus further comprises an audio output device to announce the presence of a liquid shutoff event.

4. The apparatus of Claim 1 wherein said apparatus further comprises a communications link to announce the presence of a liquid shutoff event.

5. A method of shutting off liquid flow in a main liquid inflow line to a building that has incurred a leak that involves the steps of:

Sensing the acoustic signature within the line,

Comparing the acoustic signature with pre-determined limit conditions, and

 

controlling a liquid shutoff valve in the line to cease liquid flow input to the main liquid inflow line should the acoustic signature indicate a leak anywhere in the system.

6. The method of Claim 5 wherein a visual or audio signal is generated indicating the occurrence of the shutoff of the liquid line.

7. The method of Claim 5 wherein a communications link transmits a signal indicating the occurrence of the shutoff of the liquid line.

8. The method of Claim 5 wherein the line leads to a single appliance or fixture.

9. The method of Claim 5 wherein the line leads into a water main line for a house or building.

10. An apparatus adapted for stopping leaks in a water line comprising:

an apparatus for sensing or monitoring the acoustic signature of said water line,

a logic controller able to analyze the acoustic signature and determine whether the acoustic signature is indicative of a water leak,

a water shutoff valve connected to the water line,

a drive unit for opening and closing the water shutoff valve, and

a software package for analysis of the acoustic signature and closing of the water shutoff valve,

wherein the logic controller and software are capable of discriminating between more than one acoustic signature and controlling the water shutoff valve

based on inappropriate continuation of any of the plurality of signatures being monitored.

11. The apparatus of Claim 10 wherein the logic controller further comprises a manual override.

12. The apparatus of Claim 10 further comprising a communications link for notification of closing of the valve.

13. The apparatus of Claim 10 further comprising a receiver visual indication of the status of the system.

14. The apparatus of Claim 10 further comprising a battery to supply power to said apparatus.

15. The apparatus of Claim 14 wherein said battery is rechargeable.

16. The apparatus of Claim 10 wherein the software package comprises training subroutines to analyze normal water usage patterns prior to the apparatus being placed in service to detect leaks.

17. The apparatus of Claim 10 further comprising feedback from remote sensors, which authorize water flow to occur to an appliance or other outlet.

18. The apparatus of Claim 10 where the apparatus monitors and controls water flow to the water main of a house of building.

19. The apparatus of Claim 1 further comprising inputs from remote fixtures or appliances in the building or structure that authorize water flow through those remote fixtures of appliances.